REMARKS

In response to the Office Action mailed December 20, 2005, Applicants respectfully request reconsideration. Claims 15, 18-22 and 34-36 were previously pending in this application with claims 18-22 being withdrawn from consideration. No claims have been amended or canceled. Claims 37 and 38 have been added. Support for these claims can be found at page 32, lines 12 and 13.

As a result, claims 15 and 34-38 are pending for examination with claims 15 and 34 being independent. The application is believed to be in condition for allowance.

Objections to the Title

The Office Action has objected to the title of the application as not being descriptive of the claimed invention. The title has been amended to "A Method for Material Property Monitoring with Perforated, Surface Mounted Sensors." Applicants respectfully assert the title as amended is descriptive of the claimed invention. Accordingly, withdrawal of this objection is respectfully requested.

Summary of Embodiments of Applicants' Invention

An example of one embodiment of Applicants' invention is described in the specification at page 17, lines 4-28; and page 32, lines 9-13. It should be appreciated that the description below is merely an example of one of many embodiments that fall within the scope of Applicants' claims and is provided merely for the purpose of highlighting some aspects of Applicants' invention.

The described sensor is capable of providing a measure of fatigue damage prior to the formation of cracks detectable by traditional non destructive inspection methods (page 17, lines 4-28). The sensor may be fabricated with a porous (or liberally perforated) substrate material to provide continuous monitoring and inspection for stress corrosion cracking or corrosion fatigue (page 32, lines 9-13). Illustrative perforations are shown in amended Figures 8a and 8b at 249.

It will be understood that a continuous, non-permeable sensor substrate would protect the surface from the environment that causes the corrosion process to occur. A porous or perforated

substrate avoids or minimizes that interference, thus allowing corrosion to occur. The sensor is thus able to monitor natural properties with corrosion.

Rejections under U.S.C § 102

The Office Action rejects claims 15 and 34-36 under U.S.C § 102(b) as being anticipated by Kolter, U.S. Patent No. 4.384.252 (Kolter). Applicants respectfully traverse this rejection.

Kolter illustrates a reluctance-type transducer system used to provide a signal representative of the relative motion and/or position between two adjacent bodies (Col. 1, lines 8-10). The transducer of Figure 1 (relied upon by the Office Action) comprises a permanent magnet 20, an output signal coil 22, a metallic sense wheel, the sense wheel comprising several sense features 26, an air gap 28, and a rotating body 30. The sense features 26 are used to periodically enhance and reduce the magnetic flux across the air gap 28 between the poles of the permanent magnet 20 as the sense wheel 24 rotates with the rotating body 30. An output signal is included in coil 22 that is proportional to the time rate of change of flux within the coil (Col. 4, lines 57-66).

The device in Kolter may be viewed in two ways. First, the sensor may be seen as comprising the permanent magnet 20, air gap 28 and the sense features 26, where the sensor is measuring the movement of the rotating body 30. Alternatively, the sensor may be seen as comprising the permanent magnet 20, where the sensor is measuring the movement of the sense features 26.

Claim 15 is directed towards a method for monitoring material properties, the method comprising *mounting an electromagnetic sensor with perforations on a test material surface*, the sensor having *conducting segments and being responsive to an electrical property of the material area under the sensor*, the perforations in the sensor allowing corrosion to occur *at the test material surface*, driving the conducting segments with an electrical signal to measure a sensor response, and converting the sensor response into at least one electrical property of the material under the sensor.

Discussion of Claims 15 and 34 in Relation to the First Interpretation of the Kolter Device:

When considering the sensor of Kolter as comprising the permanent magnet 20, the air gap 28, output signal coil 22, and the sense features 26, where the sensor measures the movement of the rotating body 30, the claimed invention is clearly distinguishable. The sensor is not responsive to an electrical property of the test material, that is the rotating body 30, as required by claims 15 and 34. Furthermore, even if one of skill of the art were to consider the gap in a c-shaped permanent magnetic to be a perforation (which Applicants do not concede) the location of the gap does not allow for the corrosion or environmental exposure of the material under test, the rotating body 30.

Discussion of Claims 15 and 34 in Relation to the Alternative Interpretation of the Kolter Device:

When considering the sensor of Kolter as comprising the permanent magnet 20 and output signal coil 22, where the sensor measures the movement of sense features 26, the claimed invention is also clearly distinguishable. The sensor is *not mounted on* the test material surface, but is *instead mounted above* the test material surface. One of skill in the art would appreciate that if the permanent magnet 20 were to be mounted on the sense wheel, the wheel would not be able to rotate freely within the permanent magnet 20 and thus would not be able to properly measure the changes in magnetic flux. Furthermore, one of skill in the art would appreciate that a gap between permanent magnet poles and the measured object is not a perforation.

CONCLUSION

Thus, for the reasons discussed above, neither interpretation of the sensor described by Kolter teaches or suggests all of the claimed limitations required in claims 15 and 34. Specifically, Kolter does not teach at least "an electromagnetic sensor with perforations on a test material surface, the sensor.... being responsive to an electrical property of the material under the sensor" (claim 1), or "mounting an electromagnetic sensor on a test material surface..., the sensor...being responsive to an electrical property of the material under the sensor" (claim 15). Accordingly, withdrawal of this rejection is respectfully requested.

In view of the above remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Dated: 3/30/06